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CERCARIA OF THE TREMATODE *PLAGIORCHIS MUTATIONIS* (TREMATODA, PLAGIORCHIIDAE) FROM THE POND SNAILS, *LYMNAEA STAGNALIS*, IN UKRAINE

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Cercaria of the Trematode *Plagiorchis mutations* (Trematoda, Plagiorchiidae) from the Ponds Snails, *Lymnaea stagnalis*, in Ukraine. Zhytova O. P. — Morphological characteristics and measurements of *Plagiorchis mutationis* Panova, 1927 cercaria found for the first time in the intermediate host, pond snail *Lymnaea stagnalis* in Ukraine are given.

Key words: *Lymnaea stagnalis*, *Plagiorchis mutationis*, molluscs, cercaria.

Церкария трематоды *Plagiorchis mutationis* (Trematoda, Plagiorchiidae) из большого прудовика, *Lymnaea stagnalis,* на территории Украины. Житова Е. П. — Дана морфологическая характеристика церкарий трематоды *Plagiorchis mutationis* Panova, 1927, впервые обнаруженной на территории Украины в промежуточном хозяине большом прудовике, *Lymnaea stagnalis.*

Ключевые слова: *Lymnaea stagnalis*, *Plagiorchis mutationis*, моллюски, церкарии.

Introduction

Plagiorchis mutationis (Trematoda: Plagiorchidae) is a bird parasite, mainly parasitising fish-eating birds. It was first described by L. G. Panova in 1927 (Shigina, 1965). The life cycle of this trematode was studied and described by N. G. Shigina (1965). In the experimental studies, snails *Lymnaea ovata* have been used as the first intermediate host.

Published data on life cycles of trematodes from the genus *Plagiorchis* Luhe, 1899 (Krasnolobova, 1987) contain information on synonyms of the species *Plagiorchis mutationis* Panova, 1927 and *Plagiorchis laricola* Skrjabin, 1924. In the life cycle of *Plagiorchis laricola*, snails from the family Lymnaeidae, in particular *Lymnaea* (*Ampullaceana*) *ovata*, *Lymnaea* (*Lymnaea*) *stagnalis*, *Lymnaea* (*Peregriana*) *peregra* are the first intermediate hosts (Krasnolobova, 1971; 1987).

Material and methods

The work was based on the collections of *Lymnaea stagnalis* from Grybove Lake in Ovruch district of Zhytomyr oblast in 2009. More than 300 specimens were examined. Mollusc species was identified by conchological method with using of anatomical data (Stadnichenko, 2004).

Morphology was studied on active mature cercariae emerging from molluscs, using vital staining with neutral red and Nile blue sulfate. Cercariae were described based on previously immobilized living specimens.

Results and discussion

During the study of trematodes fauna of mollusks in Grybove lake, cercariae Xiphidiocercariae of “armatae” group were registered. They belonged to *Plagiorchis mutationis* Panova, 1927 as it was revealed during their examination.

Cercariae found in the present study were similar to the larvae of *Plagiorchis mutationis* registered in *Lymnaea* (*Stagnicola*) *palustris* and described by S. N. Vodyanitskaya (2006) by their morphological features and size (table 1).

Table 1. Main measurements of *Plagiorchis mutationis* cercaria, mm
Таблица 1. Основные размеры церкарий *Plagiorchis mutationis*, мм

Character	*Plagiorchis mutationis* (our data, n = 15)	*Plagiorchis mutationis* (after Shigina, 1965)	*Plagiorchis mutationis* (after Vodyanitskaya, 2006)	*Plagiorchis laricola* (син. *Plagiorchis mutationis* after (Krasnolobova, 1971; 1987)
Body length	0.198–0.258	0.162–0.405	0.187–0.210	0.225–0.288
Body width	0.108–0.120	0.048–0.210	0.080–0.102	0.108–0.126
Tail length	0.192–0.294	0.152–0.304	0.187–0.255–	0.09–0.135
Tail width	0.03–0.036	0.038–0.047	0.028	0.03–0.045
Stylet length	0.028–0.03	0.036–0.040	0.028–0.030	0.028–0.033
Stylet width	0.005–0.006	0.006–0.007	0.007	0.004
Length of buccal sucker	0.048–0.054	0.053–0.059	0.041	0.05–0.06
Width of buccal sucker	0.054–0.061	0.063–0.068	0.054	0.045–0.081
Length of ventral sucker	0.024–0.036	0.043–0.046-	0.025	0.036–0.041
Width of ventral sucker	0.033–0.039	0.046–0.053	0.033	0.045–0.054
Pharynx diameter	—	—	—	0.023
Length of pharynx	0.023–0.03	0.026–0.030	—	—
Width of pharynx	0.019–0.001	0.018–0.023	—	—
Length of oesophagus	0.058–0.06	—	—	0.063

Cercaria *Plagiorchis mutationis* were found in Ukraine for the first time.

Cyrcariae *Plagiorchis mutationis* Panova, 1927

Host. *Lymnaea stagnalis.*

Locality. hepatopancreas.

Distribution. Grybove Lake (Selezivka village, Ovruch district, Zhytomyr oblast).

On each side of the body, evenly, one by one, seven fine hairs are visible. Body length is 0.205 ± 0.010 mm, width 0.112 ± 0.001 mm (fig. 1). Stylet is in the buccal cavity. Stylet has shoulders, its length is 0.028 ± 0.0002 mm, width is 0.005 ± 0.001 mm (fig. 2). Buccal sucker is 0.048 □ 0.059 mm in diameter, slightly compressed in the longitudinal direction, similarly to the ventral sucker. Ventral sucker is 0.031 x 0.038 mm in diameter; it is smaller than the buccal sucker and is located in the centre of the body. Nine pairs of penetration glands are on each side of the ventral sucker. The digestive system is represented by short prepharynx, muscular pharynx 0.026 ± 0.001mm in length, and 0.019 ± 0.001 mm in width, oesophagus 0.060 ± 0.0002 mm in length, and intestines. Intestine is bifurcated before the ventral sucker, intestinal branches reach bladder level.

Excretory system represented by Y-shaped bladder and excretory channels flowing into it from both sides. Body parenchyma is filled with lipoid droplets. Cercariae has tail 0.262 ± 0.010 mm in length, 0.030 ± 0.001 mm in width, with no weaverbird.

Until now, cercariae of one trematode species from family Plagiorchiidae: *Plagiorchis elegans* (Rudolphi, 1802) have been found in pond mollusks in Ukraine (Stenko, 1983). At the same time, 11 trematode species from genus *Plagiorchis* including *P. mutationis* were noted in reptiles and birds on the territory of Ukraine (Catalog..., 1995).

Comparative analysis of size and morphology of *P. mutationis* larvae, their comparison with published data of other researchers (Shigina, 1965; Krasnolobova, 1971, 1987; Vodyanitskaya, 2006) showed some differences is measurements and in the number of penetration glands. According to data of Krasnolobova (1971), in cercaria of *Plagiorchis laricola* Skrjabin, 1924 (syn. *Plagiorchis mutationis* Panova, 1927) 7–8 pairs of penetration glands were observed; Zhdarskaya (1966) found 6–8 pairs of these cells, Reimer (1966–1967) — 7 glands on each side (by Krasnolobova, 1987). The contradictory literature data on the number of penetration glans Krasnolobova (1982, 1987)

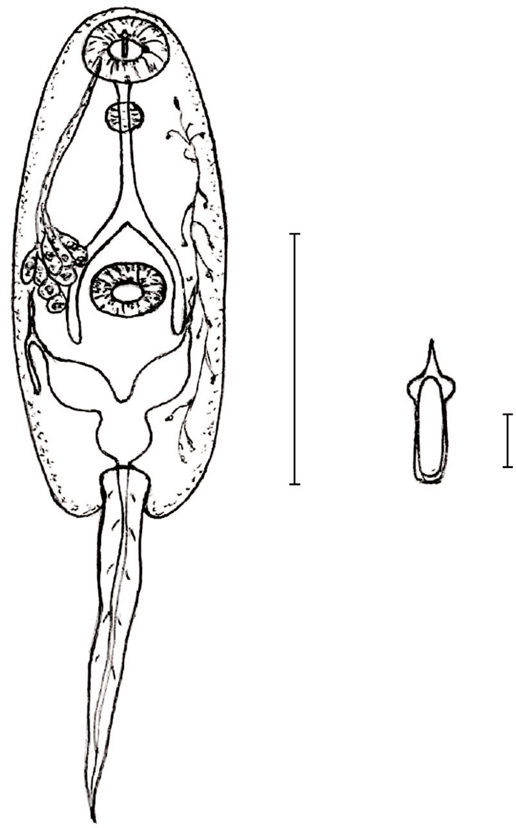


Fig. 1. Cercaria of *Plagiorchis mutationis*: *1* — cercaria; *2* — stylet. Scale bar: *1* — 0.1 mm; *2* — 0.01 mm.

Рис. 1. Церкария *Plagiorchis mutationis: 1* — церкария; *2* — стилет. Масштабная линейка: *1* — 0,1 мм; *2* — 0,01 мм.

explained by different way of their staining resulting in different number of stained cells that leads to different results. Also, there are some distinctions in measurements (table 1). Variations in these characteristics directly depended on the method of cercariae fixation (Krasnolobova, 1987).

During the study of parasitic fauna of Grybove Lake, we found out that in June — July 2009 prevalence of *L. stagnalis* infection with *P. mutationis* larvae was 3.67 ± 1.09%.

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